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09/841,255 04/24/01 KAMBE

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EXAMINER

IM52/0928

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ART UNIT

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

# Office Action Summary

Application No.

09/841,255

Applicant(s)

KAMBE ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-10, 12-15 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 12-15 and 23-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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The drawings, filed 9 July 2001, are approved under 37 CFR 1.84. Applicants are reminded of the changes to 37 CFR 1.84 and that the Draftsman no longer needs to approve the drawings. (See 65 Fed. Reg. 54603, 9/8/00).

The preliminary amendment of 24 April 2001 has been entered.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 15, 23 and 25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 9 and 13 of copending Application No. 09/136,483. Although the conflicting claims are not identical, they are not patentably distinct from each other because the polishing composition of claims 9 and 13 of Application No. 09/136,483 suggests the polishing composition and method of claims 15, 23 and 25 of the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 9 of Application No. 09/136,483 teaches a polishing composition comprising a dispersion of alumina particles, where the particles have an average particle diameter from about

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5 nm to about 500 nm and where less than one in  $10^6$  particles have a diameter greater than three times the average particle size and claim 13 teaches this dispersion is an aqueous dispersion.

Applicants have defined the phrase “effectively no particles” as meaning less than one in  $10^6$  particles on page 20, lines 4-12 of the specification. Thus claim 9 teaches a dispersion containing effectively no particles having a diameter greater than three times the average particle size. Since the claims teach a polishing dispersion, one of ordinary skill in the art would have found it obvious to use this polishing dispersion to polish or smooth a surface using the claimed composition.

Claims 1-4, 6, 15 and 23-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 14-18, 24 and 26 of copending Application No. 09/433,202. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed particle dispersion and claimed method of polishing using the particle dispersion of Application No. 09/433,202 suggest the polishing compositions and polish method claimed in the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 1 of Application No. 09/433,202 teaches a particle dispersion comprising a liquid and particles having an average particle diameter from about 5 nm to about 50 nm and where less than one in  $10^6$  particles have a diameter greater than three times the average particle size. Applicants have defined the phrase “effectively no particles” as meaning less than one in  $10^6$  particles on page 20, lines 4-12 of the specification. Thus claim 1 teaches a dispersion containing effectively no particles having a diameter greater than three times the average particle size.

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Claims 3 and 4 teaches the particles can be composed of silica, silicon carbide, silicon nitride and metal oxides. Claims 14-18 teaches the liquid can be water, an aqueous solution or an organic liquid, which is a nonaqueous solution. Claim 24 teaches the particles have a distribution such that at least 95% of the particles have a diameter greater than 40% of the average diameter and less than 160% of the average diameter. Claim 26 teaches using the claimed dispersion as a polishing composition, which suggests smoothing a surface by polishing the surface with the claimed composition.

Claims 1-4 and 6-8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of Patent Application Publication No. 2001/0000912. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed polishing compositions and methods of Patent Application Publication No. 2001/0000912 suggest the polishing compositions and methods claimed in the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1 and 5 of Patent Application Publication No. 2001/0000912 teach a polishing compositions comprising particles of metal compounds having an average diameter in the range of about 5-100 nm and a distribution where at least 95% of the particles have a diameter greater than 60% of the average diameter and less than 140% of the average diameter. Claims 2 and 3 teach the particles are dispersed in an aqueous or nonaqueous solution. Claim 4 teaches the composition of the particles. These are the same compositions claimed in the present application.

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Claims 6-8 of Patent Application Publication No. 2001/0000912 teach smoothing a surface using the composition of claim 1 using a polishing pad or a motorized polisher.

Claims 1, 4, 6, 15 and 25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-8 and 11 of U.S. Patent No. 6,290,735. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed polishing compositions and methods of Patent No. 6,290,735 suggest the polishing compositions and methods claimed in the present application.

Claims 1, 2 and 4 of U.S. Patent No. 6,290,735 teach a polishing compositions comprising particles of metal carbides having an average diameter in the range of about 5-50 nm. Claims 7 and 8 teaches the metal carbide can be SiC, WC, Fe<sub>3</sub>C or Fe<sub>7</sub>C<sub>3</sub>. Claim 5 teaches the composition has effectively no particles having a diameter greater than about 5 times the average diameter and claim 11 teaches the particles in the composition has a distribution where at least 95% of the particles have a diameter greater than 60% of the average diameter and less than 140% of the average diameter. Since the claims teach a polishing dispersion, one of ordinary skill in the art would have found it obvious to use this polishing dispersion to polish or smooth a surface using the claimed composition.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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Claims 15 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 554,908.

This reference teaches alumina particles, which are to be used in a polishing slurry. Example 2 teaches alumina particles where substantially all of the particles have a particle size in the range of 20-50 nm and that is a substantial absence of particles, or effectively no particles, having a particle size greater than 100 nm. Since substantially all the particles have a size in the range of 20-50 nm, the average particle size must be within the claimed range. Thus the dispersion of example 2 have effectively no particles having a diameter of greater than 100nm, which is less than five times any number in the range of 20-50. Since the reference teaches the particles are used in a polishing slurry, it implicitly teaches a polishing dispersion and the use of this slurry to smooth a surface or polish a surface. The claimed dispersions and methods read upon those taught by the reference.

Claims 1, 2, 4, 6-8, 15, 23 and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gutsche.

This reference teaches a polishing slurry consisting of an aqueous solution and silica particles. The example teaches a dispersion of silica particles having a particle size of 25-30 nm, which means all the particles have a size within this range and that the average particle size is also within this range. Since all the particles are within this range, there are no particles having a particles size that is greater than 5 times the average particles size and all the particles have a particles that is greater than 60% of the average size and less than 140% of the average particle size. The example teaches smoothing surface using this composition, where the polishing is

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performed using a polishing pad in a motorized polisher. The claimed dispersions and methods read upon those taught by the reference.

Claims 1, 4, 6, 9, 10, 12-15 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu et al.

This reference teaches silica particles used in polishing slurries. The particles have a monodispersed uniform particles size of 50 nm or less. Examples 1, 3 and 4 teaches uniform silica particles all have a particle size of 25, 42 or 17 nm and a purity of greater than 99.9%. The taught silica particles have a single crystal phase and figure 1 and the statement that the particles are uniform means the particles have a uniformity of 100%. Since the reference teaches the particles are used in a polishing slurry, it implicitly teaches a polishing dispersion and the use of this slurry to smooth a surface or polish a surface. The claimed dispersions and methods read upon those taught by the reference.

Claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rostoker et al (U.S. Patent 5,389,194).

This reference teaches a method of polishing a surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad. The taught particles are composed of alpha alumina or silica particles. Example 3 teach these particles are composed of at least 90% of alpha alumina particles, where the particles have an average particle size of 10 nm (the X value) and a distribution where all the particles have a size within 10% of the average particles size (the Y value). This means that all the particles are within the range of 10% of the average particle size and 110% of the average



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particles size. Accordingly, there are no particles have a size greater than 5 times the average particle size. The claimed dispersions and methods clearly read upon those taught.

Claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Rostoker (U.S. Patent 5,626,715).

This reference teaches a method of polishing a surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad. The taught particles are composed of alpha alumina or silica particles. Example 3 teach these particles are composed of at least 90% of alpha alumina particles, where the particles have an average particle size of 10 nm (the X value) and a distribution where all the particles have a size within 10% of the average particles size (the Y value). This means that all the particles are within the range of 10% of the average particle size and 110% of the average particles size. Accordingly, there are no particles have a size greater than 5 times the average particle size. The claimed dispersions and methods clearly read upon those taught.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 554,908 in view of Sandhu et al, Rostoker, Rostoker et al and Gutsche.

As stated above, EP 554,908 teaches the claimed polishing compositions comprising a dispersion of alumina particles. This reference does not teach the composition of the liquid used in the polishing composition, but one of ordinary skill in the art would have found it obvious to

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use liquids conventionally used in polishing compositions. Sandhu et al, Rostoker, Rostoker et al and Gutsche all teach aqueous and nonaqueous solutions are conventionally used in polishing compositions. Thus one of ordinary skill in the art would have found it obvious to use an aqueous solution as the liquid in the taught polishing composition. The references suggest the claimed composition.

Claims 2, 3, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Sandhu et al, Rostoker, Rostoker et al and Gutsche.

As stated above, Shimizu et al teach the claimed polishing compositions comprising a dispersion of silica particles. This reference does not teach the composition of the liquid used in the polishing composition, but one of ordinary skill in the art would have found it obvious to use liquids conventionally used in polishing compositions. Sandhu et al, Rostoker, Rostoker et al and Gutsche all teach aqueous and nonaqueous solutions are conventionally used in polishing compositions. Thus one of ordinary skill in the art would have found it obvious to use an aqueous solution as the liquid in the taught polishing composition. The references suggest the claimed composition.

Claims 1, 2, 4, 6-9, 12, 15, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker or Rostoker et al.

Both of these references teach a method of polishing a semiconductor surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad. While the references do not teach the polishing is preformed with a motorized polisher, one of ordinary skill in the art would have found it obvious to use a motorized polisher since motorized polishers are conventionally used to polish as

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semiconductor surface in combination with a polishing composition. The particles are composed of silica particles or alumina particles, which are all substantially in the alpha phase, preferably at least 90% or 100% of the particles in the alpha phase. The taught particles have an average particle size in the range of 10-100 nm, preferably 10-50 nm. This range overlaps the claimed range. The references teach the particles have a distribution where all the particles have sizes, which fall within 10-50% of the average particle size, which is the taught P value. This means that all the particles are within the range of P% of the average particle size and  $(100+P)\%$  of the average particles size. This teaching is clearly exemplified by examples 1 and 3 of both references and in claims 2 and 3 of Rostoker. The references clearly suggest the claimed composition and methods.

Claims 1-4, 6, 15 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al in view of Gutsche, Rostoker et al or Rostoker.

Sandhu et al teach a method of smoothing a surfacing using a chemical-mechanic polishing composition comprising alumina or silica abrasive particles dispersed in either an aqueous or a nonaqueous solution. Sandhu et al do not teach the particle size characteristics for the taught abrasive particles. One of ordinary skill in the art would have found it obvious to use conventional chemical mechanical abrasive particles as the abrasive particles in the taught method. Gutsche, Rostoker et al and Rostoker all teach conventional chemical mechanical abrasive particles. Therefore, one of ordinary skill in the art would have found it obvious to use the particles of these references as the particles in the composition of Sandhu et al. These particles in Gutsche, Rostoker et al and Rostoker all have particle size characteristics, which fall

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within or overlap the claimed size characteristics. The references suggest the claimed compositions and processes.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (703) 308-3817. The examiner can normally be reached on Monday-Thursday from 7:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (703) 308-3823.

The fax number for Amendments filed under 37 CFR 1.116 or After Final communications is (703) 872-9311. The fax number for all other official communications is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661 or (703) 308-0662.

cmk  
September 27, 2001



C. Melissa Koslow  
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